Southern

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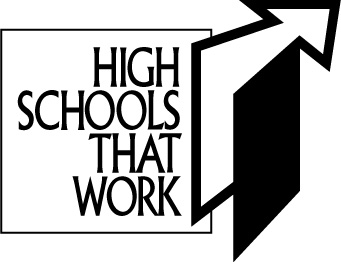
592 10th Street N.W.

Atlanta, GA 30318

(404) 875-9211

www.sreb.org

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Joining a College-Ready Academic Core with Intellectually Demanding Career/Technical Courses

***Preparation for Tomorrow —***

Joining a College-Ready Academic Core with Intellectually Demanding Career/Technical Courses

*A multi-state consortium to develop curricula, assessments, instructional materials and teacher/counselor training that provide more students with relevant and challenging career/technical courses.*

**Purpose and Scope of the *Preparation for Tomorrow* Initiative**

The purpose of the Southern Regional Education Board’s (SREB) *Preparation for Tomorrow* (*PFT*) initiative isto develop intellectually demanding career/technical (CT) courses in high-demand, high-skill, high-wage career fields that can be joined with a college-ready academic core and forged into a pathway/program of study, leading students to several options beyond high school, including an entry-level job, advanced training, industry certification, a two-year college certificate or associate’s degree, and a bachelor’s degree. The aim is to support states’ efforts to increase the success of high-need students in academically rigorous courses and programs through the incorporation of rigorous and relevant project-based, contextualized learning.

For this project, SREB is partnering with participating states, each of which will develop four standards-based CT courses in high-demand, high-skill, and high-wage career areas unique to its economical needs and opportunities. These standards-based CT courses will be contextual and project-based, will incorporate the new Common Core State Standards (CCSS), and will require students to use academic knowledge and skills to complete authentic projects that enable them to understand the standards’ relevance to their future. The courses also will incorporate cooperative learning strategies, engaging instructional techniques, guidance and advisement, extra help, and formative and summative assessments — all elements required for ensuring students meet high standards. In addition, SREB and its consortium of partner states and schools will identify complimentary academic courses (called the college-ready academic core) and create a rigorous training program for teachers, principals and guidance counselors to enable them to implement and teach the courses effectively.

**Rationale for SREB’s Commitment to *PFT***

Emerging high-demand, high-skill, high-wage job opportunities in the new economy will require specialized preparation. As noted in a 2011 *Time* article, “workers with a graduate, bachelor’s or associate degree or even some college experience will get an increasing share of the jobs created” in the new economy.[[1]](#footnote-1) A highly educated and technically competent workforce will be needed to meet the employment demands of the new global marketplace. A report from the Georgetown University Center on Education and the Workforce[[2]](#footnote-2) forecasts that by the end of the decade, 63 percent of jobs will require postsecondary education. Employers will need 22 million new workers with postsecondary degrees, and we will fall short of that demand by three million workers without a dramatic change in course.

Emerging occupational demands will require more people educated to higher levels with specialized knowledge and skills, including the academic core with a depth of knowledge in high-demand, high-skill, and high-wage fields. ***PFT* embraces this need for specialized preparation and training for 21st-century skills by coupling the college-ready academic core with learning experiences that tap into students’ interests and aspirations, providing necessary support, and linking education to a career goal and further learning. This model can engage more students in learning, improve student motivation, close achievement gaps, graduate more students from high school and graduate them prepared for a range of postsecondary options.**

In addition to improving the quality and quantity of rigorous high school CT programs, the *PFT* project will give emphasis to college-readiness. Two key goals of the project are to get more students ready for college without having to take remedial course work and to increase the number of students completing postsecondary advanced training at two- or four-year colleges. Providing students with a defined career goal that postsecondary education will help them meet motivates more students to persist in further education.

**Phases Each State Will Complete — Design to Full Implementation**

In partnership with SREB, each participating state will complete eight main phases of work:

1. **Choose a career area that the state has identified as important to its economic development** **and for which there is a growing demand.**
2. **Convene a panel of experts from business, industry, higher education and high school to design a non-duplicative sequence of four standards-based CT courses**: **two foundational courses,** which will deepen students’ academic knowledge in algebra, geometry and other academic areas essential for continued learning with the career area; and **two specialized courses**, aimed at an educational and career pathway that will potentially count for college credit based on student performance. Developed materials will include curricular and instructional materials, one fully developed project, multiple skeletal projects, and formative and summative assessments. The courses will incorporate core state academic standards and technical standards. They also will be aligned with the college-ready academic core, which includes four college-preparatory (CP) English courses; four math courses, including Algebra I, geometry, Algebra II and a higher-level course; three lab-based CP science courses; and three social studies courses.
3. **Design assessment specifications, course syllabi and authentic project units for each of the four courses, with at least two of the courses linked to postsecondary education and advanced career training.** This phase of work will include designing a course syllabus, one fully developed project/problem unit and skeletal outlines for other project/problem for each of the four courses.
4. **Design a low-stakes end-of-course (EOC) exam for each course to measure student mastery of course standards and to provide *PFT t*eachers with a common assessment tool.** A test development expert will guide states through the development process. This will result in four end-of-course assessments, which are essential in changing how and what students are taught in CT classes. The two specialized courses will have a performance level that signifies the achievement necessary to earn postsecondary course credit.
5. **Design and implement the professional development system for preparing teachers to teach each of the four courses and for preparing counselors to understand the career field, its opportunities, and the knowledge and skills required for success.** Teachers will receive two weeks of training prior to teaching the courses along with follow-up support. A three-day program will be provided to principals, guidance counselors, and math and science teachers to help them understand all element of the *PFT* program, support implementation of the program in their school and ensure students receive needed support services.
6. **Design an iterative evacuation methodology to guide development, field-testing and revision of curriculum, training and assessment materials.** Feedback will include responses to teacher questionnaires, responses on student surveys, and qualitative data collected through school and classroom observations. This information will be used to determine the extent to which the *PFT* design has been implemented, what worked, what did not work, and what needs improvement.
7. **Field-test the curriculum, instructional materials and professional development in consortium schools.** The goals of the field test are to determine if the curriculum projects engage and motivate students as intended; to validate assessment and data tools; evaluate effectiveness of professional development; and inform decisions for statewide implementation.
8. **Establish conditions for implementation, continuous improvement of the courses and materials, support for fidelity of implementation, and evaluation of student impact.** Partner states will identify a set of conditions for use of the *PFT* materials. Each of the states will be required to institutionalize all elements of the *PFT* program. A strategy and blueprint will be designed by the states for establishing a rigorous evaluation to assess student outcomes to ensure that the *PFT* initiative is self-sustaining beyond the fifth year. Such expanded state capacity to engage in high-quality CT curriculum and program development is the optimum outcome for this effort.

**Career Focus Areas**

States have identified several emerging career areas for which to develop CT curricula/pathways in partnership with SREB. These career areas have emerged during meetings with state, business, industry, economic development and educational leaders as career areas important to the state’s economic vitality. Without exception, each state’s career area for curriculum development addresses the labor market needs projected by national and state workforce development experts. By including input from representatives from business and industry, higher education, state agencies, and secondary education, *PFT* will provide more students with relevant and challenging CT studies that result in improved student achievement, graduation rates, and readiness for college and careers.

* ***Aerospace Engineering (Alabama)*** ― Includes aerodynamics, flight systems, aerospace materials, systems engineering, automation and robotics, geospatial technology, electronics and possible others.
* ***Innovations in Science and Technology (Arkansas) —*** Disciplines include cutting-edge multidisciplinary fields of science and engineering (e.g., nanotechnology, cyberinfrastructure, imaging, geospatial technology) with the focus on hands-on research (laboratory experiences) and development (e.g., prototype design and development, business planning and incubation, risk capital formation, and intellectual property protection).
* ***STEM Education and Training (Kansas)*** ― A STEM-focused program that includes middle grades and high school science, mathematics and technology teaching; research-based pedagogy; testing and evaluation; contemporary models of public school transformation; practicum; and possible others.
* ***Informatics (Kentucky)*** ― Includes the study of the methods for acquiring, storing, processing, communicating and reasoning about information. Informatics occurs through the implementation, organization and use of computer hardware, and software development. The use of C++ or java will be included. The career area program likely would have projects and problems characterized by the rigorous application of analysis, experimentation and design applicable to the health service industry.
* ***Construction Design and Management (Maryland)*** ―Includes construction design, residential construction systems, commercial construction systems, LEED rating system and certification, construction management, cost estimation and bidding, building codes, construction bonds, insurance, workers compensation and possible others.
* ***Food and Nutritional Sciences (Nebraska)*** ― Includes biology, human body systems, organic chemistry, food and genetic science, nutrition counseling, biochemistry, anatomy and physiology, epidemiology, microbiology, sports nutrition, athletic training and possible others.
* ***Global Logistics (New Jersey)*** ― Includeslogistical planning and management of the movement of people, materials and goods; warehousing and distribution management systems; and, infrastructure planning and management.
* ***Entrepreneurship/Small Business Development (New Jersey)*** ― Includes business and finance, digital applications, principles of management, business entrepreneurship, small business management, database programming, project management, and business start-ups.
* ***Project Management (North Carolina)*** ― Includes designing project management systems; innovative uses of informatics in business settings; effective management of risk; understanding global infrastructures; and, project monitoring and control, managing the project management environment and monitoring quality control.
* ***Health Informatics (Ohio)*** — Includes applied research and practice in clinical and public health fields to include translational bioinformatics, clinical research informatics, clinical informatics, consumer health informatics and public health informatics.
* ***Automated Materials Joining Technologies (Ohio)*** ― Includes engineering design, electricity/electronics, mechanical systems, proprieties of materials, materials joining, destructive and non-destructive material testing, sensing-monitoring and inspecting systems, automation-robotics and process control technology, and possible others.
* ***Renewable Energy Technologies (South Carolina)*** ― Includes engineering design, electricity/electronics,construction wiring, computer technology, mechanical systems, motors-generators and controls, photovoltaics, fuel cells, aerodynamics and possible others.
* ***Energy and Power (West Virginia)*** ― Includes energy, power, motors & generators, electrical and mechanical systems, fluid systems, electronic systems, process controls, integrated systems, power transmission, power distribution and controls, smart grid systems and possible others.

**Vision of Implementation of *PFT* in Schools**

The *PFT* curricula and materials have the potential to motivate and engage students in learning, increase graduation rates, and ensure high school graduates are prepared for college and careers. To ensure the project meets this potential, states and schools implementing the *PFT* curricula have agreed to a set of implementation conditions:

* Teachers selected to teach the *PFT* courses should have an adequate background of math, science and technical expertise to teach these integrate courses. They may have a math or science background or may have specialized preparation in the career field. They should demonstrate passion to teach in the area and, if they have previously taught, should have a track record of teaching all students to high levels.
* Teachers will participate in at least two weeks of summer training before teaching the course. This training will prepare them to use a project-based approach to teaching; deepen their technical and academic knowledge and skills; and develop their skills for using formative and summative assessments to improve both in their instructional methodology and student learning.
* The state and the district will commit to provide modern labs with the essential equipment and technology needed for teaching the courses.
* *PFT* teachers will participate on a STEM team with math, science and English/language arts teachers. The school principal would agree to establish a common planning time for the *PFT* teachers and the larger STEM team members to meet, plan integrated projects and support each other in their work.
* Participating schools and teachers will agree to use the course syllabi as a basic framework for the course, to fully develop skeletal projects and to teach the fully developed project units that are available. They will participate in a continuing effort to revise the curriculum and instructional materials so that they might be shared with others.
* The state, school and teacher will agree to be part of a continuous improvement effort to see what is working and what is not working in order to improve the implementation of the *PFT* career pathway. They will use the developed EOC exams and evaluate results to improve instruction, to identify major gaps in student learning and to develop new teaching strategies to address the gaps. Students and teachers will complete a survey to evaluate their experiences in the course. The resulting data will become a basis to draw conclusions and make connections between what students experienced in the course, what teachers said they did to teach the course, and students’ performance on the end-of-course assessments. This research will allow states, schools and SREB to continually improve and adapt the *PFT* materials as necessary.
* The principal and the counselor of the school will embed the project-based *PFT* course sequence into a clear pathway/program of study, combined with the college-ready academic core and aligned to advanced training, an associate’s degree, or a baccalaureate degree.
* The high school will formulate a transitional agreement with postsecondary institutions — technical colleges, community colleges, and/or four-year institutions — that outlines the conditions under which students could transition from the *PFT* program of study to further study in the career field. This may involve assigning dual credit for one or two courses.
* The principal and the teacher agree to establish a culture of high expectations for students in the *PFT* course, holding students to high standards. As students complete various projects and exams, they will have opportunities to participated in a planned relearning and reteaching process for standards they failed to master. The goal; is to ensure all students meet the standards. Schools will provide a system of support for students as they take more challenging academic courses and assist them in meeting course standards.
* Each student will have an assigned adviser/counselor who will work with him or her to lay out a program of study leading to continued learning beyond high school and will provide him or her with continuing assistance to review that program of study. Some students may choose to change career fields, and they certainly would be supported to do so.

**Benefits of *PFT***

**Benefits to students:** Students who participate in this program will have an opportunity to test out their aptitudes, interests and abilities in a given career field and determine if the field fits their long-term goals. They will have greater exposure to professionals who are employed in the field and will learn about the kind of knowledge and skills needed to enter and to advance in the field. *PFT* will help students find a niche and a purpose in high school and a reason for achieving at levels.

**Benefits to teachers:** Teachers will have a series of courses — and the training to teach those courses — that allow students to see a connection between what they are learning in high school and what they want to do in the future. The courses will provide students with another way of learning and will provide teachers with the tools to help all students meet standards. CT teachers in particular will benefit from the structured *PFT* curricula. These high-quality courses will raise teaching and learning in CT fields to a higher level, making CT a true partner in advancing the educational achievement of students in a school.

**Benefits to schools:** The *PFT* curricula and materials will provide schools with high-quality CT programs of study and with necessary training to ensure more students graduate prepared for a range of postsecondary options. As more students are engaged in high-level learning connected to their career and educational goals, schools will be able to graduate more students and graduate them prepared to succeed in college, careers and advanced training.

**Benefits to parents:** Parents will become partners in students’ education as they participate in helping students select and pursue programs of study that lead to a stated career and educational goal. Further, parents will benefit from the knowledge that their child can find a connection between doing well in high school and being prepared for college, a career and advanced training.

**Benefits to postsecondary institutions:** Postsecondary institutions will be able to enroll more students who are prepared for college-level work and who have a goal in mind, making them more likely to complete their studies and graduate from college.

**Benefits to employers:** Graduates from *PFT* programs of study will be able to read and comprehend complex materials, use math to solve real problems, understand the application of science in the real world, and work in teams, providing employers with job applicants who are ready for the real work of the career field.

**Benefits to the community:** By connecting more students with a goal and a reason for succeeding in high school, the *PFT* programs of study can improve graduation rates and the success of community schools and can reduce the number of students who fail to complete high school.

**About SREB**

The Southern Regional Education Board (SREB) is a nonprofit, nonpartisan organization based in Atlanta, Georgia, that works with member states to improve pre-K-12 and higher education. SREB was created in 1948 by Southern governors and legislatures to help leaders in education and government work cooperatively to advance education and improve the social and economic life of the region. Its many programs and initiatives share a single, powerful mission: to help the region lead the nation in educational progress.

SREB’s *High Schools That Work* (*HSTW*) program is the nation’s largest school improvement initiative for high school teachers and leaders. Founded in 1987 by the SREB State Vocational Education Consortium, the program has grown from 28 pilot sites to its current size of more than 1,200 sites in 30 states and the District of Columbia. This program is based on the belief that most students can master complex academic and technical concepts if schools create an environment that encourages students to make the effort to succeed. The *HSTW* Goals, Key Practices and Key Conditions provide a framework for whole-school improvement in participating schools and districts.

For more information, visit [www.sreb.org](http://www.sreb.org).

***PFT* Staff**

***For more information about the* PFT *initiative, contact:***

Gene Bottoms, Senior Vice-President, SREB, *HSTW*, [gene.bottoms@sreb.org](mailto:gene.bottoms@sreb.org)

Leslie Carson, Director, *Preparation for Tomorrow*, *HSTW*, [leslie.carson@sreb.org](mailto:leslie.carson@sreb.org)

Dick Blais, Advisor and Consultant, *Preparation for Tomorrow,* dickblais@nycap.rr.com

Kenna Barger, Barger Educational Consulting, Mathematics, [bargerconsulting@frontier.com](mailto:bargerconsulting@frontier.com)

Frank Duffin, School Improvement Specialist, Literacy, *HSTW*, [frank.duffin@sreb.org](mailto:frank.duffin@sreb.org)

Bob Moore, School Improvement Consultant, Science, *HSTW*, [bob.moore@sreb.org](mailto:bob.moore@sreb.org)

Jim Berto, Research Associate, *HSTW,* [james.berto@sreb.org](mailto:james.berto@sreb.org)

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